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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,721	06/26/2003	Ian Robinson	NG(ST)-6445	5804
26294 7590 02/04/2009 TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P. 1300 EAST NINTH STREET, SUITE 1700 CLEVEVLAND, OH 44114				
EXAMINER				
BURD, KEVIN MICHAEL				
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2611				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/606,721

**Applicant(s)**

ROBINSON ET AL.

**Examiner**

Kevin M. Burd

**Art Unit**

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4-6, 12-17, 19-24 and 27-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12, 13, 16, 20, 21, 30-33 and 37-40 is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, 14, 15, 17, 19, 22-24, 27-29 and 34-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

1. This office action, in response to the amendment filed 11/20/2008, is a final office action.

***Response to Arguments***

2. The declaration filed on 7/1/2008 under 37 CFR 1.131 is sufficient to overcome the Corral (US 2004/0086054) reference.
3. In view of the amendment to claims 12, 13, 16, 20 and 21, the previous rejections of these claims are withdrawn. These claims, as well as newly added claims 30-33 and 37-40 are indicated as allowed as stated below.
4. Applicant's arguments regarding the previous rejection of claims 14, 15, 17, 19 and 22 have been fully considered but they are not persuasive. Tellado discloses side information is transmitted per symbol. Therefore, the symbol and the corresponding side information are sent at the same time. Please see column 27, lines 6-22. In addition, Tellado discloses that particular method requires that additional information, side information, be sent along with the transmitted signal in column 2, lines 1-3. Tellado also considers other ways of transmitting the side information in column 32, lines 53-57.

Regarding the rejections of claims 1 and 3-6, the arguments provided are the same as the arguments provided for claim 14. Therefore the response to these arguments is the same as stated above.

Regarding the rejections of claim 23-26, as stated in the previous office action, the scale factor is associated with reducing the peak value since an error is detected

when the signal is above a predetermined threshold (column 6, lines 11-18). The removal of the errors present in the signal will reduce the amplitude of the signal.

Rejections of new claims 27-29 and 34-36 are stated below.

For these reasons and the reasons stated in the previous office action, the rejections of the claims are maintained and stated below.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14, 15, 17, 19 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Tellado et al (US 6,314,146).

Regarding claims 14 and 15, Tellado discloses a communication system. The system comprises a signal modifier for modifying an input signal to reduce peak values associated with an input signal to reduce peak values associated with the input signal and provides a peak reduced input signal. The abstract of Tellado discloses the system for reducing the peak to average power ratio of a signal by clipping an original signal at transmission. The transmitter inserts side information prior to transmission of the signal. The side information may be sent to the receiver concerning the clipping and the more information provided to the receiver, the easier it is for the receiver to decode the transmitted signal (column 27, lines 6-22). The side information may be sent on a per

symbol basis or less frequently depending on the PAR scheme (column 27, lines 13-16). The signal will be amplified prior to transmission (figure 28B). The side information and the data are "transmitted in a parallel relationship".

Regarding claims 17 and 19, Tellado discloses a communication method. The method comprises a signal modifier for modifying an input signal to reduce peak values associated with an input signal to reduce peak values associated with the input signal and provides a peak reduced input signal. The abstract of Tellado discloses the method for reducing the peak to average power ratio of a signal by clipping an original signal at transmission. The transmitter inserts side information prior to transmission of the signal. The side information may be sent to the receiver concerning the clipping and the more information provided to the receiver, the easier it is for the receiver to decode the transmitted signal (column 27, lines 6-22). The side information may be sent on a per symbol basis or less frequently depending on the PAR scheme (column 27, lines 13-16). The signal will be amplified prior to transmission (figure 28B). The side information and the data are "transmitted in a parallel relationship".

Regarding claim 22, Tellado discloses a communication system. The system comprises a signal modifier for modifying an input signal to reduce peak values associated with an input signal to reduce peak values associated with the input signal and provides a peak reduced input signal. The abstract of Tellado discloses the system for reducing the peak to average power ratio of a signal by clipping an original signal at transmission. The transmitter inserts side information prior to transmission of the signal. The side information may be sent to the receiver concerning the clipping and the more

information provided to the receiver, the easier it is for the receiver to decode the transmitted signal (column 27, lines 6-22). The side information may be sent on a per symbol basis or less frequently depending on the PAR scheme (column 27, lines 13-16). The signal will be amplified prior to transmission (figure 28B).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado et al (US 6,314,146) in view of Tong et al (US 2003/0099302).

Regarding claim 1, Tellado discloses a communication system. The system comprises a signal modifier for modifying an input signal to reduce peak values associated with an input signal to reduce peak values associated with the input signal and provides a peak reduced input signal. The abstract of Tellado discloses the system for reducing the peak to average power ratio of a signal by clipping an original signal at transmission. The transmitter inserts side information prior to transmission of the signal. The side information may be sent to the receiver concerning the clipping and the more information provided to the receiver, the easier it is for the receiver to decode the transmitted signal (column 27, lines 6-22). The side information may be sent on a per symbol basis or less frequently depending on the PAR scheme (column 27, lines 13-

16). Tellado discloses that particular method requires that additional information, side information, be sent along with the transmitted signal in column 2, lines 1-3. Tellado also considers other ways of transmitting the side information in column 32, lines 53-57. The signal will be amplified prior to transmission (figure 28B). Tellado does not disclose shaping a modulation constellation of the input signal to reduce the peak values associated with the input signal. Tong discloses constellation shaping as shown in figure 5. Constellation shaping is a method of reducing the power required to transmit data relative to the power required for an unshaped constellation while keeping the minimum distance between constellation points the same (paragraphs 0054-0057). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the shaping components of Tong into the device of Tellado to further reduce the power of the system.

Regarding claim 4, column 27, lines 6-22 of Tellado discloses the transmission of the side information and the peak reduced signal.

Regarding claim 5, Tellado discloses the PAR reduction is used in an OFDM system (column 27, lines 23-38).

Regarding claim 6, Tellado discloses the DAC that converts the peak reduced signal to an analog signal prior to transmission (figure 28B).

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado (US 6,314,146) in view of Kupferschmidt et al (WO 01/43320 A2). Kupferschmidt et al (US 7,080,006) is a translation of WO 01/43320 A2.

Regarding claim 23, Tellado discloses the communication system stated above in paragraph 5. Tellado does not disclose transmitting a scale factor with the data associated with reducing peak values. Kupferschmidt discloses a communication system comprising communication devices. A transmitter transmits digital data. The transmitter also transmits an instruction signal comprising a scale factor that corresponds to the data. Column 1, lines 11-31 disclose the transmission of the data and scale factor. Figure 1 shows the reference value selection 4 and reference value 5 of the data frame includes the scale factor (column 5, lines 47-53). Figure 1 shows audio data 6 and additional data 7 is transmitted after the scale factors (column 4, lines 48-53). The scale factors are used for the decoding of digital audio data which is used to perform an error recognition dependent on transmitted reference values e.g., scale factors (abstract). The scale factor is associated with reducing the peak value since an error is detected when the signal is above a predetermined threshold (column 6, lines 11-18). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the system of Kupferschmidt into the system of Tellado to provide a plausible test for error and to correct the errors (Kupferschmidt, column 1, lines 53-61).

8. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado (US 6,314,146) in view of Tong et al (US 2003/0099302) further in view of Kupferschmidt et al (WO 01/43320 A2). Kupferschmidt et al (US 7,080,006) is a translation of WO 01/43320 A2.



Regarding claim 24, the combination of Tellado and Tong disclose the communication system stated above in paragraph 6. The combination does not disclose transmitting a scale factor with the data associated with reducing peak values. Kupferschmidt discloses a communication system comprising communication devices. A transmitter transmits digital data. The transmitter also transmits an instruction signal comprising a scale factor that corresponds to the data. Column 1, lines 11-31 disclose the transmission of the data and scale factor. Figure 1 shows the reference value selection 4 and reference value 5 of the data frame includes the scale factor (column 5, lines 47-53). Figure 1 shows audio data 6 and additional data 7 is transmitted after the scale factors (column 4, lines 48-53). The scale factors are used for the decoding of digital audio data which is used to perform an error recognition dependent on transmitted reference values e.g., scale factors (abstract). The scale factor is associated with reducing the peak value since an error is detected when the signal is above a predetermined threshold (column 6, lines 11-18). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the system of Kupferschmidt into the system of the combination of Tellado and Tong to provide a plausible test for error and to correct the errors (Kupferschmidt, column 1, lines 53-61).

Regarding claim 25, Kupferschmidt discloses the data and scaling factors are transmitted concurrently in that the data is translated in the same data frame as shown in figure 1.

Regarding claim 26, Kupferschmidt discloses scaling factors are placed prior to the data in the frame in claim 1.

9. Claims 27, 29, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado (US 6,314,146) in view of Uesugi (WO 02/058294 A1). Uesugi (US 2003/0142621) is a translation of WO 02/058294 A1.

Regarding claims 27, 29, 34 and 36, Tellado discloses the device stated above in paragraph 5. Though Tellado discloses the clipped information may be sent to the receiver as side information through a variety of methods, as discussed and as may be well known in the art, Tellado does not disclose the instruction signal is configured as an orthogonal code that is combined with the input signal or the instruction signal and the input signal are modulated in a TDMA manner. Uesugi discloses a peak power suppressing apparatus. Quality information is superposed on the set of subcarriers for transmission and, in the receiver, that quality information is extracted (paragraph 0094). This quality information is used to reduce the peak value of the input signal (paragraphs 0095 and 0101). Uesugi discloses the device operates by means of OFDM communication scheme. Nevertheless, the same effect can be achieved by transmitting the quality information by means of non-OFDM communication schemes, for instance, TDMA or CDMA communication schemes (paragraph 0093). Since the act of transmitting side information in both TDMA and CDMA systems are well known, it would have been obvious for one of ordinary skill in the art at the time of the invention to apply the step of transmit side information to suppress peak power in these common communication schemes transmission system. The TDMA and CDMA transmission systems would share the same benefits the OFDM communication schemes has experienced in increased effectiveness and efficiency.

10. Claims 28 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado (US 6,314,146) in view of Yin (US 6,104,946).

Regarding claims 28 and 35, Tellado discloses the device stated above in paragraph 5. Though Tellado discloses the clipped information may be sent to the receiver as side information through a variety of methods, as discussed and as may be well known in the art, Tellado does not disclose side information occupies a first frequency band and the input signal occupies at least one additional frequency band. Yin discloses allocating required side information in a plurality of sub bands (column 11, lines 34-52). Adaptive methods of bit allocation can reduce the amount of side information bits that are actually transmitted in the system. The example discloses reduces 128 bits to 40 bits of side information to be transmitted. By transmitting the information in sub bands and adaptively allocating those bits, the total number of bits necessary for the transmission can be reduced, improving the efficiency of the transmission system. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teaching of Yin into the device of Tellado.

### ***Conclusion***

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/  
Primary Examiner, Art Unit 2611  
1/31/2009